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(56) Documents cited
GB 1374942 A GB 1316512 A GB 1101821 A
GB 1034829 A GB 0758175 A GB 0577221 A
GB 0560954 A GB 0370611 A WO 87/06811 A
US 3616747 A

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(54) **Device for boiling shrimps**

(57) Device for boiling shrimps, comprising a water tank (2), a heating device (3) for heating water in said water tank, a transporting device provided with supply (10) and discharge means (13) for conveying the shrimps through said water tank (2). The transporting device comprises a conveyor screw (4) with a lying rotating shaft (5). Parts of the screw drum and spiral wall may be perforated.

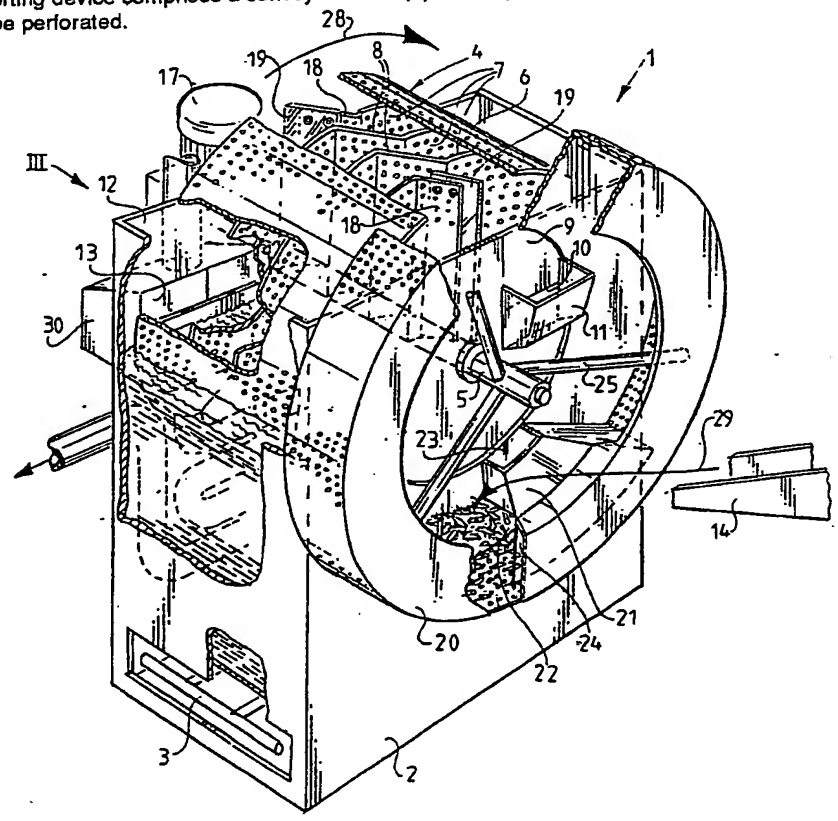

FIG. 1

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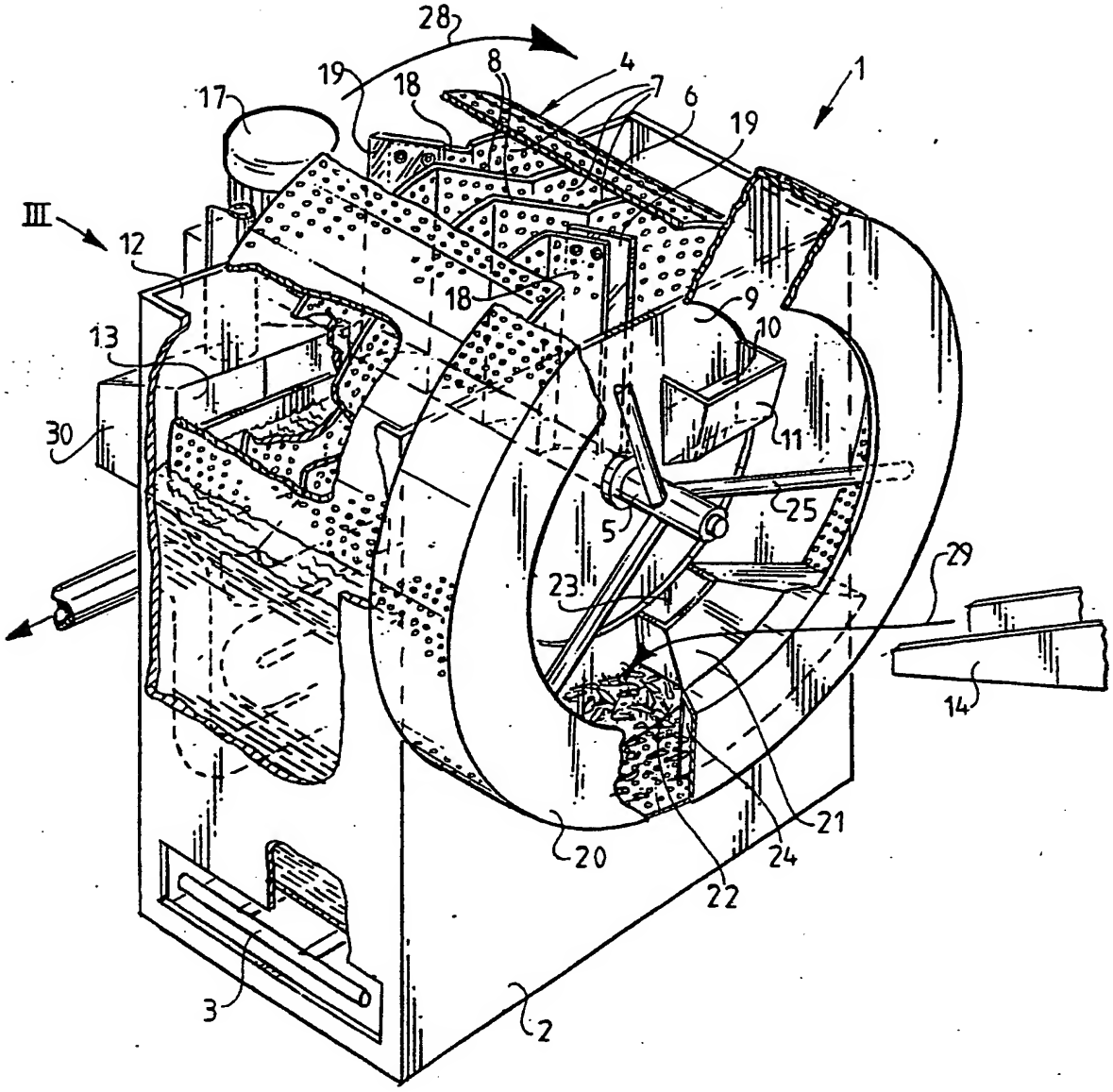
28
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FIG. 1

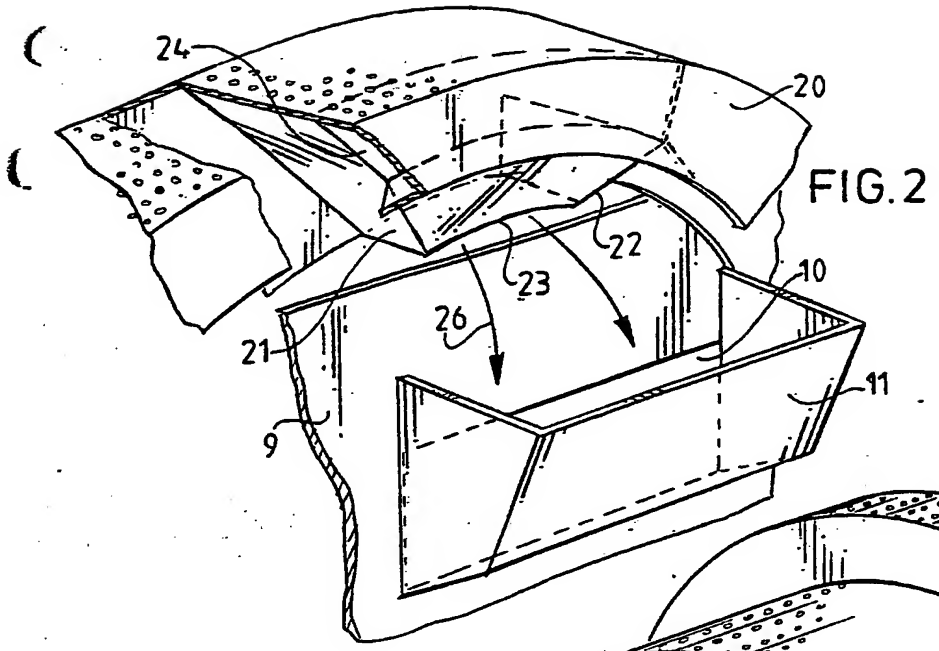

FIG. 2

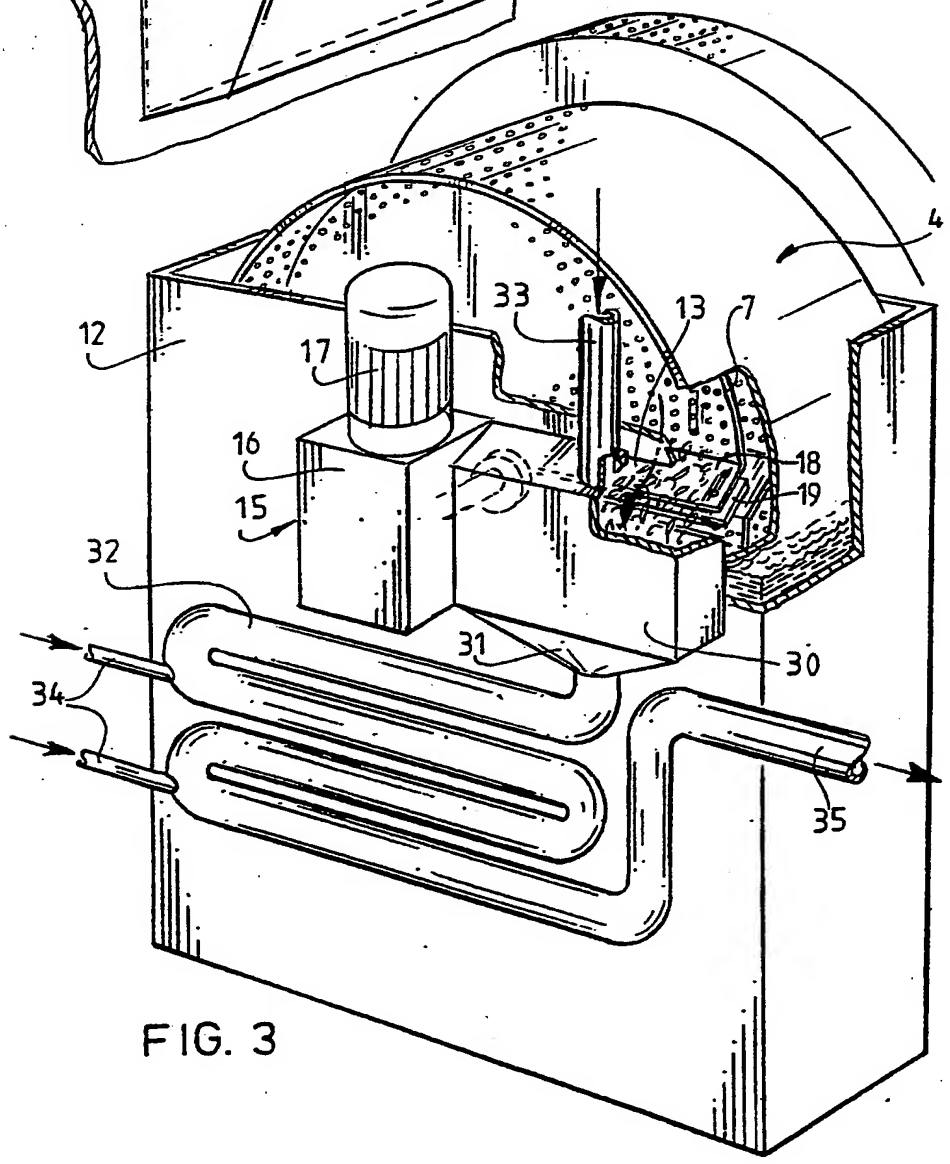

FIG. 3

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DEVICE FOR BOILING SHRIMPS

The invention relates to a device for boiling shrimps, comprising a water tank, a heating device for heating water in the water tank and a transporting device provided with supply and discharge means for conveying the shrimps through the water tank.

Such a device, whereby the transporting device is formed by a conveyor belt which guides the shrimps in separate compartments through the water in a water tank, is known. This known device is relatively complicated because of the guiding and drive means for the conveyor belt.

The invention has for its object to provide a device of the type described in the preamble which is simple in construction.

With a device according to the invention this is achieved in that the transporting device comprises a conveyor screw with a lying rotating shaft. As a result the device needs to comprise only a single moving part so that it can be simple in construction. The movement is thereby also a constructively favourable rotational movement.

A preferred embodiment of the device is characterized in claim 2. Because of the drum wall moving as one whole the shrimps are conveyed in a sure manner right through the device without the risk of becoming damaged between wall parts moving relative to each other.

In addition the step of claim 3 is preferably thereby applied, which has the advantage that a very good water circulation results, and the boiling process can consequently take place in a reliable manner.

A very favourable embodiment is characterized in claim 4. As a result the device acquires a very simple construction thus ensuring a good and reliable operation.

A further favourable development of the invention is characterized in claim 5. The use of a dosing drum ensures that per revolution the correct quantity of shrimps is carried into the conveyor screw so that blockage and the consequent loss of a batch of shrimps is prevented. The device can as a result function in a reliable manner without any supervision.

A constructively favourable embodiment is characterized in claim 6.

A construction which further contributes to the aim of the invention because it can be realized with comparatively simple means is found in claim 7. The conveyor screw in this embodiment is assembled in a favourable manner from flat wall parts which can be easily connected to each other by welding.

Achieved in a favourable manner with the step of claim 8 is that with each revolution all the shrimps are conveyed each time in the transporting direction parallel to the rotation shaft. All the shrimps hereby undergo the same boiling process so that the end product is of a uniform quality.

The invention will be further elucidated in the following description with reference to the embodiments shown in the figures.

Fig. 1 shows a partly broken away perspective detail of an embodiment of the invention.

Fig. 2 shows a partial perspective view of the dosing drum of the device of fig. 1.

Fig. 3 shows in partly broken away perspective view the device of fig. 1 along arrow III in fig. 1.

The device 1 in fig. 1 comprises a water tank 2 which, as shown, can have a simple box shape. The front wall 9 and the rear wall 12 of the tank 2 are parallel to one another. Although not shown, a closing cover can be placed on water tank 2 since, as will be described later, the supply and removal respectively of shrimps to be boiled and boiled

shrimps takes place through the front wall 9 and the rear wall 12.

Arranged at the bottom of the water tank 2 is a heating device 3. This can be embodied in various ways and comprise for example a heat exchanger so that for example waste heat can be used for heating the water for boiling in the water tank 2. The heating device 3 can also comprise an enclosed burner which gives off its heat directly to the water for boiling.

Mounted horizontally in water tank 2 is a rotating shaft 5 which carries a conveyor screw 4. The conveyor screw 4 is assembled from a number of flat discs 7 arranged parallel to each other and at an equal mutual distance and on the periphery of which a fixed drum 6 is arranged. The discs 7 each comprise a radial groove which in the embodiment shown is of a breadth corresponding substantially to the distance between adjacent discs 7, while moreover the shaft is of the same breadth. Welded between the groove edges of adjacent discs 7 situated diagonally opposite one another are slanting connecting walls 8. The connecting wall parts 8 close with their respective end walls onto the shaft 5 and the drum 6.

As a result of this construction of flat discs 6 provided with grooves with diagonal dividing wall parts 8 the spaces between the adjacent discs 7 are connected together into a substantially spiral shape. The axially outermost discs 7 bear wall portions 18 parallel to the connecting wall parts 8 and provided with flexible wiper strips 19. These flexible wiper strips 19 lie against the inside of the front and rear wall 9, 12 of the water tank 2.

Formed in the front wall of the water tank is a feed opening 10 through which shrimps can be carried into the first section of the conveyor screw 4. Formed in the rear wall 12 is a discharge opening 13 through which the shrimps which have passed through the conveyor screw are carried away.

The shaft 5 protrudes through the front wall 9 of the water tank 2. Mounted on the protruding end of the shaft 5 is a dosing drum 20. This dosing drum 20 consists as shown of two annular discs held at a distance from one another by a drum wall. The drum 20 is mounted on the shaft 5 using spokes 25. Formed in the space defined between the annular discs and the drum wall of the dosing drum 20 is a dosing receptacle 21. This dosing receptacle has an inlet 22 open in a radial plane in the rotational direction and an outlet 23 open in the direction towards the shaft 5.

During operation the shaft 5 is driven in rotation in the direction of arrow 28 by means of a driving 15 comprising a reduction gearing 16 which is coupled with its output shaft to the rotation shaft 5 and which is coupled at its input to a drive motor 17.

During operation of the device shrimps are conveyed into the dosing drum 20 via a feed device 14, as indicated by arrow 29. When the dosing receptacle 21 is moved upward out of the lowest position upwards this dosing receptacle is filled with the supplied shrimps. Excess shrimps can move past the dosing receptacle via the passage 24. When the dosing receptacle 21 is raised further as a consequence of the rotation of the dosing drum 20 the shrimps are moved further upward along with it. Close to the highest point of the rotary movement the shrimps fall out of the outlet 23 of the dosing receptacle 21 and fall into a funnel 11 open towards the top and arranged around the feed opening 10. This is made clear in fig. 2 with the arrows 26. The action of the dosing drum 20 with the dosing receptacle 21 therefore ensures that with each revolution of the rotation shaft 5 only a maximum quantity of shrimps can be carried into the conveyor screw 4. Blockage of the device is in this way prevented with certainty.

It will be apparent that with each subsequent revolution of the rotation shaft 5 the shrimps supplied will be moved one segment in the direction of the rear wall each

time a groove in a flat disc 7 is situated in a position under the rotation shaft. After three revolutions the shrimps supplied via the feed opening 10 have arrived in the segment of the transport drum 4 adjoining the rear wall 12. When the following revolution takes place the shrimps are received into the rearmost segment by the wall portion 18 and the flexible wiper strip 19 attached thereto. As soon as this wall portion 18 with wiper strip 19 passes over the discharge opening 13 the shrimps slide along the sloping surface formed by this wall portion 18 through the opening 13 into the collection bin arranged behind the rear wall 12. Water is supplied at the top to this collection bin 30 via the conduit 33. This water has a low temperature so that the boiled shrimps are immediately cooled. Owing to the water flow supplied via the conduit 33 the shrimps are washed via the funnel 31 connecting to the bottom of the collection bin 30 into the conduit 32. The water flow carries the shrimps to the shrimp discharge 35 beneath which a collecting bin can be placed in the usual manner.

The conduit 32 bends back and forth a number of times such that its length is sufficient for the shrimps to be properly cooled to the required low temperature. In order to prevent blockage of the transport conduit 32 and to ensure an adequate supply of cold water extra water feeds 34 are arranged. Towards the shrimp discharge 35 the conduit 32 is again bent upwards so that a water seal is formed, which ensures that the shrimps in the conduit 32 are at all times in contact with the cooling and transporting water.

The drum wall 6 of the conveyor screw 4 is dimensioned such that the end edges thereof are situated close to the inside of the front and rear wall 9, 12. This distance is preferably a maximum of 2 millimetres. This ensures on the one hand that no shrimps can escape through this gap and on the other hand that there occurs no friction contact of the drum with the wall of water tank 2.

As is indicated in the drawing the walls of the conveyor screw 4 and of the dosing drum 20 are perforated.

Water which may have fallen into the dosing drum 20 with the shrimps can thus escape and does not end up in the water tank 2. As noted earlier, the perforations in the conveyor screw 4 ensure a good circulation of the water for boiling.

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CLAIMS

1. Device for boiling shrimps, comprising a water tank, a heating device for heating water in said water tank, a transporting device provided with supply and discharge means for conveying the shrimps through said water tank, characterized in that said transporting device comprises a conveyor screw with a lying rotating shaft.

2. Device as claimed in claim 1, characterized in that the conveyor screw is formed by a cylindrical drum wall and a spiral wall element defining a substantially helical transporting channel and extending from a central shaft to said drum wall and being fixedly connected thereto.

3. Device as claimed in claim 2, characterized in that the drum and the spiral wall element are perforated.

4. Device as claimed in any of the foregoing claims, characterized in that the end edges of the drum wall lie, with the exception of a small clearance, against the inside of a front and rear wall of the water tank and that arranged in said front and rear wall are respectively a supply and discharge opening.

5. Device as claimed in claim 4, characterized in that the rotation shaft protrudes through the front wall of the water tank and on the protruding end thereof is arranged a dosing drum supplying at each revolution a maximally dosed quantity of shrimps into the supply opening.

6. Device as claimed in claim 5, characterized in that the dosing drum comprises a dosing receptacle comprising an inlet open in a radial plane in the rotation direction and an outlet open in the direction of the rotation shaft, and that arranged on the supply opening is a funnel open to the top and extending over at least the axial distance of said outlet.

7. Device as claimed in any of the foregoing claims, characterized in that the spiral wall element comprises a number of flat discs arranged on the shaft at regular mutual intervals in radial planes, each of which have a radial groove with a breadth largely corresponding with said interval and whereby slanting connecting wall parts are arranged in each case between groove edges of adjacent discs situated diagonally opposite one another in order to achieve a substantially spiral form.

8. Device as claimed in claim 7, characterized in that the axially outermost discs bear wall portions parallel to the connecting wall parts and provided with flexible wiper strips in contact with the front and rear wall of the water tank.

9. A device for boiling shrimps substantially as described herein.

10. A method of boiling shrimps substantially as described herein.

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